

Claims

1. A condition analysis apparatus comprising:

a three-dimensional sensor for measuring, at a plurality of sampling points,
5 sampling-point-moves in a height direction of an object existing in a target
area; and

area definition means for defining an area where a plurality of the sampling-
point-moves are in the generally same phase.

10 2. The condition analysis apparatus as recited in claim 1, further comprising:
information output means for outputting information of an area including the
area defined by the area definition means.

3. The condition analysis apparatus as recited in claim 1 or 2, the three-
15 dimensional sensor having:

a projection device for projecting a light pattern on the target area;

a image capturing apparatus for capturing an image of the target area while
the light pattern is projected thereon; and

measurement means for measuring shifts of the pattern on the captured
20 images,

wherein sampling-point-moves in the height direction of the object are
measured at the plurality of points based on the shifts of the pattern measured.

4. The condition analysis apparatus as recited in any one of claims 1 to 3,

25 wherein, if a specific number or more of the sampling points in a specific area
represent sampling-point-moves in the same specific type of phase, the area
definition means defines the specific area as an area where the sampling-
point-moves in the specific type of phase are occurring.

30 5. The condition analysis apparatus as recited in any one of claims 1 to 3,

wherein the area definition means searches a specific area for sampling points representing sampling-point-moves in the same specific type of phase, forms a group of sampling points representing the sampling-point-moves in the generally same phase based on the search results, and defines the formed group
5 of sampling points as an area where the sampling-point-moves in the generally same phase are occurring.

6. The condition analysis apparatus as recited in any one of claims 1 to 4,
wherein the area definition means defines two or more areas in different
10 phases, defines a boundary between the two or more areas, and defines the areas divided by the boundary as new areas.

7. The condition analysis apparatus as recited in any one of claims 1 to 5,
further comprising:
15 anomaly determination means for determining an anomaly of the object based on the area defined by the area definition means.